

Date: Thu, 30 Sep 93 04:30:19 PDT
From: Ham-Homebrew Mailing List and Newsgroup <ham-homebrew@ucsd.edu>
Errors-To: Ham-Homebrew-Errors@UCSD.Edu
Reply-To: Ham-Homebrew@UCSD.Edu
Precedence: Bulk
Subject: Ham-Homebrew Digest V93 #60
To: Ham-Homebrew

Ham-Homebrew Digest Thu, 30 Sep 93 Volume 93 : Issue 60

Today's Topics:

 AM Stereo Add-in Possibilities
 Cavity amplifier design
 Matching network design question.

Send Replies or notes for publication to: <Ham-Homebrew@UCSD.Edu>
Send subscription requests to: <Ham-Homebrew-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Homebrew Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-homebrew".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: Tue, 28 Sep 1993 20:51:51 GMT
From: amd!amdahl!netcomsv!netcom.com!joe@decwrl.dec.com
Subject: AM Stereo Add-in Possibilities
To: ham-homebrew@ucsd.edu

Seems like someone should come out with an add-in AM stereo
board. Radio-Electronics did a kit story a few years ago using
the Motorola chip. In a side bar, a note indicated Circuit Specialists
of Tuson Arizona had a complete kit. Well, I called them and the
woman answering the phone said they no longer have anything like
this. Oh well...

The point was I tested the new super Denon unit next to the Lowe 150
with AM sysnc detector - no contest, the Lowe has a MUCH better RF
section, but NO stereo! I can add a board to demodulate AM stereo...

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Date: Wed, 29 Sep 1993 09:58:08 GMT
From: mcsun!sun4nl!tudelft.nl!news.twi.tudelft.nl!dejongh@uunet.uu.net
Subject: Cavity amplifier design
To: ham-homebrew@ucsd.edu

This is my second attempt.... I didn't receive any response at all!
Come on.. is there actually nobody who can answer my questions?

Repost.....:

For a long time I'm looking for the mathematics behind amplifier cavity design. Designing an amplifier with a $1/4$ ($3/4$ or $5/4$) wavelength Lecher is not a problem. The mathematics and formulas are widely available.

Theory and practice coincide well.

Looking at several cavity designs of tube amplifiers in the 1 - 3 GHz range it seems that one mode is common: TEM₁₀₁ (I'm not sure if this is correct). One can determine that for a circular cavity the diameter is related to half the wavelength and depends on the capacitance of the tube being used. The height, mostly fixed due to the physical properties of the tubes, determines the cavity impedance, I'm told.

I asked numerous SHF-heroes about the formulas behind the cavities. Nobody could give me a satisfying answer. In fact, most 'designers' admitted that they used the trial and error approach.

Looking in several books (electronic engineering, physics, etc) the theory behind cavities is explained. But I've never seen a publication where a tube (read: capacitance) is introduced and with what effect on the physical properties of the cavity.

I want to design an amplifier for 1296 MHz (23 cm amateurband) with a tube but I don't want to use the $3/4:5/4$ wavelength approach.

Anyone in net.land who has info, examples or references on this subject?

Thanks in advance,

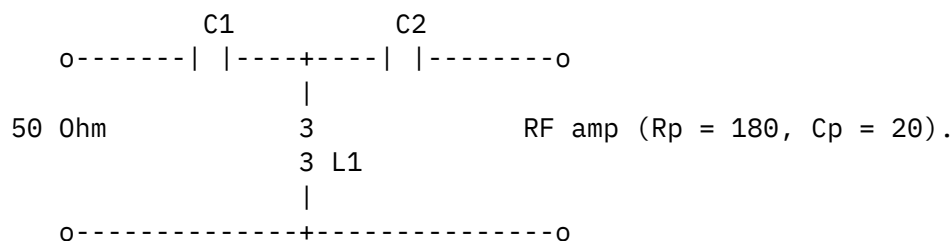
Remco, PA3FYM (besten@chem.ruu.nl)

Date: 29 Sep 93 11:41:19 CDT
 From: equalizer!timbuk.cray.com!hemlock.cray.com!andyw@network.ucsd.edu
 Subject: Matching network design question.
 To: ham-homebrew@ucsd.edu

I'm experimenting with the Motorola 3363 receiver chip, and I'm trying to come to grips with the matching network needed to provide a 50 ohm input impedance. Specifically, I'm interested in 42MHz & 440 MHz, but I'd like to be able to calculate for any frequency..

The data sheet & app notes specify the input impedance of the RF amp transistor to be 180 ohm in parallel with 20pF at 50MHz. So far, so good. They, unfortunately, do not specify what it becomes at 144 or 450 MHz.

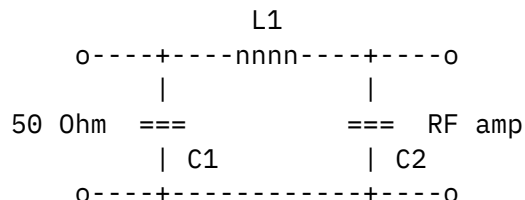
The matching networks shown in the app notes are (I believe) called "L networks" :-



The two examples they cite are :-

f (MHz)	C1	C2	L1 (variable).
49.67	39pF	1nF	0.22uH
146	22pF	39pF	0.06uH

The only matching circuits I could find in my books were in "RF Transistors" (Dye & Granberg, ISBN 0-750-69059-3, a book I think is excellent, FWIW) page 119. None of which looked like that, so I chose this network :-



and calculated the values for a Q of 10 @ 42 MHz (this will be a 1st IF freq, so is my choice of 10 reasonable for Q ?). They came out to be practical values (C1 = 390pF, C2 = 190pF, L1 = 100nH).

Since I've got no sanity check that these values are anywhere near correct, and inadequate test equipment to just experiment to find the best values (I'm sure I could get a "relative best", but I'd have no idea if it was optimal or not), I was wondering if anyone has the equations for the "L network" handy, at least then I could compare with the app note values.

I also have forgotten how to convert Rp Cp values into Rs Cs values, I have to sheepishly admit.

Finally, although it's only a dorky little matching network, for some reason, it's a really good feeling to get into some books, look up a few formulas and actually figure out component values (even though I've got no idea if they're right or not :-)).

--

andyw NØREN/G1XRL

andyw@aspen.cray.com Andy Warner, Cray Research, Inc. (612) 683-5835

Date: Wed, 29 Sep 1993 15:11:46 GMT

From: pa.dec.com!oct17.dfe.dec.com!ryn.mro4.dec.com!ricks.enet.dec.com!

reilly@decwrl.dec.com

To: ham-homebrew@ucsd.edu

References <28ae3u\$48p@hpscit.sc.hp.com>, <28ag3e\$h39@newscast.west.sun.com>, <28ajfp\$aqe@hpscit.sc.hp.com>ec.com

Reply-To : reilly@ricks.enet.dec.com ()

Subject : Re: Anyone interested in discussing PLL synt

In article <28ajfp\$aqe@hpscit.sc.hp.com>, rkarlqu@scd.hp.com (Richard Karlquist) writes:

|> BTW, the MC145159
|> synthesizer chip with sampling phase detector has a bug in it, so if you
|> use it, be aware of the bug.....

Where can I find information on the "bug". Is this for the -1 or -2 variant?
Could you post a quick description to the net?

Also, has anyone else noticed that the app note is not terribly instructive when it comes to using the frequency steering output?

Other than that the 159 is a pretty neat chip.

Matt Reilly

KB1VC

End of Ham-Homebrew Digest V93 #60
